ShriShankaracharya Institute of Professional Management & Technology
Department of Information Technology

Class Test – II Session- Jan – June 2023 Month - June

Sem- B. Tech. 4th **Subject**-Data Structure **Code- B033411(033)**

Time Allowed: 2 hrs. Max Marks: 40

Note: ***-Attempt any 5 questions. All questions carry equal marks.***

Q.N.	Questions	Marks	Levels of Bloom's taxonomy	Cos
1.	Explain Stack with diagram. Also Explain the Algorithm of Push and Pop Operation.	[8]	Analyze	CO2
2.	Convert the following infix expression to postfix expression using stack A + (B * C – (D/E ^ F) * G)* H.	[8]	Apply	CO2
3.	Explain Tree with its types and Basic Terminology in detail.	[8]	Understand	CO3
4.	Write Short notes:- (a) B-Tree (b) Threaded Binary Tree	[8]	Understand	CO3
5.	Explain Binary Search Tree. Make a Binary search tree for the following sequence of number. 45,36,76,23,89,115,98,39,41,56,69,48	[8]	Apply	CO3
6.	Explain Array and Link List representation of Binary Tree.	[8]	Understand	CO3

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Department of Information Technology

Class Test – II Session- Jan-june, 2023 Month-june

Sem- IT 4th Subject- Database management system

Time Allowed: 2 hrs Max Marks: 40

Note: - solve any five questions

Q. N.	Questions	Marks	Levels of Bloom's taxonomy	COs
A.	Explain all types of integrity constraints with example.	[8]	Apply	CO2
B.	Explain aggregate function of relational algebra with example.	[8]	Understand	CO2
C.	Explain join operation of relational algebra with example.	[8]	Understand	CO2
D.	Explain loss less join decompositions with example	[8]	Understand	CO3
E.	Elaborate Functional dependencies and its types with example	[8]	Understand	CO3
F.	Explain normalization with example and also elaborate what is the need of normalization in database.	[8]	Understand	CO3
G.	Explain types of SQL commands with proper example.	[8]	Understand	CO3

Shri Shankaracharya Institute of Professional Management & Technology

Department of Information Technology

Class Test – II Session- Jan – June 2023 Month- June

Sem- IT 4th, Subject- Operating System, Code- B033414(033)

Time Allowed: 2 hrs Max Marks: 40

Note: - All questions are compulsory.

<table>
<tr><th>Q.N.</th><th>Questions</th><th>Marks</th><th>Levels of Bloom's taxonomy</th><th>COs</th></tr>
<tr><td colspan="5">Unit-III</td></tr>
<tr><td>1</td><td>Discuss four necessary conditions for deadlock occurrence.</td><td>[8]</td><td>Understanding</td><td>CO3</td></tr>
<tr><td>2</td><td>As system with following process exists:
i. Draw the resource allocation graph for the following system snapshot.
ii. Check the system for safe state.
<table>
<tr><th rowspan="2">Process</th><th colspan="3">Allocation</th><th colspan="3">Max</th><th colspan="3">Available</th></tr>
<tr><th>X</th><th>Y</th><th>Z</th><th>X</th><th>Y</th><th>Z</th><th>X</th><th>Y</th><th>Z</th></tr>
<tr><td>P0</td><td>2</td><td>3</td><td>5</td><td>14</td><td>17</td><td>20</td><td>4</td><td>2</td><td>6</td></tr>
<tr><td>P1</td><td>1</td><td>3</td><td>2</td><td>5</td><td>5</td><td>8</td><td></td><td></td><td></td></tr>
<tr><td>P2</td><td>0</td><td>4</td><td>3</td><td>3</td><td>6</td><td>7</td><td></td><td></td><td></td></tr>
<tr><td>P3</td><td>4</td><td>2</td><td>3</td><td>8</td><td>11</td><td>14</td><td></td><td></td><td></td></tr>
<tr><td>P4</td><td>3</td><td>1</td><td>1</td><td>7</td><td>12</td><td>8</td><td></td><td></td><td></td></tr>
</table></td><td>[8]</td><td>Apply</td><td>CO3</td></tr>
<tr><td colspan="5">Unit-IV</td></tr>
<tr><td>3</td><td>a. Given memory patitions of 100K, 500K, 200K, 300K and 600K in order, how would each of the First-fit, Best-fit and Worst-fir algorithms place processes of 212K, 417K, 112K, and 426K in order? Which algorithm makes the most efficient use of memory?</td><td>[4]</td><td>Applying</td><td>CO4</td></tr>
<tr><td></td><td>b. Consider a mchine with 128MB physical memory and a 32-bit virtual address space. If the page size is 2KB, what is the approximate size of the page table?</td><td>[4]</td><td>Applying</td><td>CO4</td></tr>
</table>

4	**a.** Consider the sequence: 7, 0, 1, 2, 0, 3, 0, 4, 2, 3, 0, 3. If there are 3 frames available, find out the number of page faults for each of the following algorithms: i. FIFO ii. LRU iii. Optimal	[4]	Applying	CO4
	b. On a system using simple segmentation, compute the physical address for each of the logical address, given following segment table. If the address generates a segment fault, indicate so. Segment / Base / Length 0 / 330 / 124 1 / 876 / 211 2 / 111 / 99 3 / 498 / 302 i. 0, 99 ii. 2, 78 iii. 1, 265 iv. 3, 222 v. 0, 111	[4]	Applying	CO4
	Unit-V			
5	Suppose that a disk drive has 5000 cylinders, numbered 0 to 4999. The drive is currently serving a request at cylinder 15 and the previous request was at cylinder 100. The queue of pending requests in FIFO order is: 86, 1470, 913, 1774, 948, 1509, 1022, 1750, 130. Calculate the total head movements required to serve all the requests using SSTF, SCAN and C-LOOK disk scheduling algorithms.	[8]	Applying	CO5

27/06/23/IT/05-I

Shri Shankaracharya Institute of Professional Management & Technology
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Class Test – II Session- Jan. – June, 2023 Month- June

Sem- 4th Subject- Analog Electronic Circuits - B033413(033)

Time Allowed: 2 hrs Max Marks: 40

Note: - ***Attempt any 5 question. All questions carry equal marks.***

Q. NO.	Questions	Marks	Levels of Bloom's taxonomy	COs
1.	Construct and explain Wein Bridge Oscillator.	[8]	Create & Understand	CO5
2.	Discus Darlington Pair.	[8]	Understand	CO3
3.	Discuss various sources of noise in transistor.	[8]	Understand	CO4
4.	Derive the expression for current gain and voltage gain for a transistor amplifier circuit using h- parameters.	[8]	Evaluate & Understand	CO3
5.	Construct and explain with a neat diagram, working of two stage RC coupled amplifier.	[8]	Create & Understand	CO4
6.	Discuss negative feedback with respect to input impedance and output impedance.	[8]	Understand	CO5

Shri Shankaracharya Institute of Professional Management & Technology
Department of Information Technology

Class Test – II Session- Jan. – June, 2023 Month- June

Sem- 4th Subject- Analog Electronic Circuits - B033413(033)

Time Allowed: 2 hrs Max Marks: 40

Note: - ***Attempt any 5 question. All questions carry equal marks.***

Q. NO.	Questions	Marks	Levels of Bloom's taxonomy	COs
1.	Construct and explain Wein Bridge Oscillator.	[8]	Create & Understand	CO5
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Shri Shankaracharya Institute of Professional Management & Technology Department of Information Technology

Class Test – II

Session- Jan-Jun, 2023 **Month-**June 2023

Sem- 4th **Subject-** Internet of Things **Code-** B0333415 (033)

Time Allowed: 2 hrs. **Max Marks:** 40

Note: - ***Attempt any 5 questions. Each question carries equal marks.***

Q.N.	Questions	Marks	Levels of Bloom's taxonomy	COs
Q1	Explain various Survey Routing Protocols.	[8]	Understand	CO3
Q2	Describe Data Aggregation & Dissemination with suitable examples.	[8]	Understand	CO3
Q3	Explain various Security Challenges of the Internet of Things.	[8]	Understand	CO4
Q4	Explain different Design Challenges of the Internet of Things.	[8]	Understand	CO4
Q5	Describe the Industry-based IOT applications with examples.	[8]	Understand	CO4
Q6	Write Python code that demonstrates the use of various data type in IoT.	[8]	Apply	CO5

Best of Luck

Shri Shankaracharya Institute of Professional Management & Technology Department of Information Technology

Class Test – II

Session- Jan-Jun, 2023 **Month-**June 2023

Sem- 4th **Subject-** Internet of Things **Code-** B0333415 (033)

Time Allowed: 2 hrs. **Max Marks:** 40

Note: - ***Attempt any 5 questions. Each question carries equal marks.***

Q.N.	Questions	Marks	Levels of Bloom's taxonomy	COs
Q1	Explain various Survey Routing Protocols.	[8]	Understand	CO3
Q2	Describe Data Aggregation & Dissemination with suitable examples.	[8]	Understand	CO3
Q3	Explain various Security Challenges of the Internet of Things.	[8]	Understand	CO4
Q4	Explain different Design Challenges of the Internet of Things.	[8]	Understand	CO4
Q5	Describe the Industry-based IOT applications with examples.	[8]	Understand	CO4
Q6	Write Python code that demonstrates the use of various data type in IoT.	[8]	Apply	CO5

Best of Luck